AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111
Serial Number: 09/541399
Filing Date: March 31, 2000
Title: HIERARCHICAL SOFTWARE PATH PROFILING
Assignee: Intel Corporation

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REMARKS

Applicant has considered the Office Action mailed on September 10, 2003, and the references cited therewith. This response cancels claims 13, 18, and 24-25 without prejudice, amends claims 14, 19-23, 40, 49-50, 64, and 67, and adds new claims 68-69; as a result, claims 14-17, 19-23, and 40-69 are now pending in the Application.

§112 Rejections of the Claims

The claims are generally grouped into three areas. Of the claims in the Application before the current amendments, claims 13-25 are directed toward the augmentation of a control flow graph (CFG), described primarily on pages 6-11 of the Specification. Claims 40-49 concern region-based methods, described primarily on pages 5-15. Claims 50-67 relate to global-based methods, primarily on pages 15-25.

Par. 3 of the Office Action rejected claims 50-67 under 35 USC § 112, first paragraph, for not describing how one might "select" a CFG for the method. Claims 50 and 67 are amended to change "selecting" to "providing," an operation already in claim 14. This operation merely presents any desired arbitrary CFG for transformation according to the methods of the claims. These amendments, which do not narrow their scope, also cures this defect in claims 51-66, which depend from claim 50.

Par. 8 of the Office Action rejected claims 50-67 under 35 USC § 112, second paragraph, for lack of clarity with respect to the inner and outer regions of the CFG. Claims 50 and 67 are amended to recite that the hierarchical regions comprise "outer and inner regions." This clarifies the later recitations of these characteristics of the regions. Again, this non-narrowing amendment cures this defect in dependent claims 50-66.

Par. 9 rejected claims 64-66 under 35 USC § 112, second paragraph. Claim 64 is amended to remove an extraneous notation, "{p19:29}".

Par. 5 rejected claims 49 and 67 as improper dependent claims. These claims are rewritten so that they do not refer to any other claim.

Par. 7 of the Office Action rejects claims 40-67 under 35 USC § 112, second paragraph as omitting an essential step. Claims 40 and 49, relating to region-based methods, are amended to include the operation of "replacing an inner region with respect to the selected region by a

representative node." This amendment cures the defects in dependent claims 41-48 as well.

Claims 50 and 67, relating to global-based methods, is amended to add the operation of

"selecting representative paths within the regions," as described on page 18 lines 12-20 of the

Specification.

Par. 6 rejects claims 40-67 under the second paragraph of 35 USC § 112 as omitting an

allegedly essential step of assigning identifiers to graph edges to produce a unique combination.

Applicant respectfully traverses this rejection. The recitation in claim 40

> "assigning identifiers to the edges in the one region, including the added edges so
> as to produce a unique combination of the identifiers for each unique path in the region"

is cognate to claim 14's operation of

> "assigning edge values to all edges in the control flow graph such that the sum of
> the edge values along each unique path is unique within the control flow graph."

The edge values of claim 14 corresponds to claim 40's identifiers of the edges, in that

they attach to specific edges for identification purposes, as described at, e.g., page 10 lines 22-23

of the Specification. The "BL method" referred to in that passage states that the idea behind path

profiling is to "identify sets of potential paths with states, which are encoded as integers"; see the

previously cited reference to Ball, et al., "Efficient Path Profiling," page 2, col. 2. Claim 40's

"unique combination" corresponds to the unique sum produced in claim 14; Specification, page

10 line 23. The purpose of unique combinations is only to label different paths uniquely; Ball et

al., page 4 col. 2. The similar recitation in claim 50 relates to claim 14 in like manner.

Accordingly, claims 40-67 have no missing steps.

§103 Rejection of the Claims

Claims 13, 18-22, 24 and 25 were rejected under 35 USC § 103(a) as being unpatentable

over Breternitz, Jr. et al. (U.S. 6,381,739) in view of Tenev et al. (U.S. 6,108,698) in further

view of Bharadwaj (U.S. 5,894,576). Claims 15-17 were also rejected under 35 USC § 103(a) as

being unpatentable over Breternitz, Jr. et al. in view of Tenev et al., in further view of

Bharadwaj, and in further view of Muchnick ("Advanced Compiler Design Implementation,"

Morgan Kaufmann Publishers, Inc., pp. 169-177 (1997)).

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Claim 13 is canceled., and claims 15-17 are amended to depend from allowable claim 14. Claim 18 is canceled, and claims 19-22 are amended to depend from allowable claim 23. Claims 24-24 are canceled. New article claims 58-69 recite the method operations of allowable claims 14 and 23, respectively. Therefore, the rejections under 35 USC § 103 become moot. Applicant reserves the right, however, to antedate the references at a later date.

Allowable Subject Matter

Claims 14 and 23 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all the limitations of their base and intervening claims. Claims 14 and 23 are so rewritten.

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Conclusion

For the above reasons, Applicant urges that the claims are in condition for allowance, and respectfully requests reexamination under 35 USC § 132. The Examiner is invited to telephone Applicant's attorney at (612) 373-6971 to discuss any questions or suggestions as to the prosecution of this Application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.
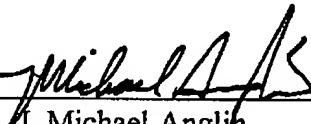
Respectfully submitted,

YOUFENG WU ET AL.

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
Attorneys for Intel Corporation
P.O. Box 2938
Minneapolis, Minnesota 55402
(612) 373-6971

Date 10 Dec 2003   By _____
                          J. Michael Anglin
                          Reg. No. 24,916

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 10 day of December 2003.

KACIA LEE   _____

Name   Signature